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ABSTRACT

Designed to gather data about emerging information needs in education, technological opportunities for more effective information systems and dissemination programs, and economic factors related to systems operations and use, this study and its data are ultimately intended to be used for making program recommendations and suggesting policy options at the federal level. It was conducted as a modified Delphi process involving 45 participants representing various education and information communities and reflecting different experiences and perspectives. The results of two Delphi studies were used as a basis for further discussions at two corresponding symposiums including participants from the Delphi groups; these in turn served as forums to reach a consensus about issues, trends, and preferred courses of action for the federal government. This report identifies those facts, trends, and recommendations of most immediate interest to federal planners which obtained a substantial consensus of opinion. These are presented in three major subsections: information needs, technological options, and economic factors influencing information systems for education. A list of participants is appended. (RAA)

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An Analysis of Data From Project Policy Options for Education Information Systems for the Future

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Study Overview

During FY79 the Research and Educational Practice unit (REP) in the Program on Dissemination and Improvement of Practice (DIP) at NIE sponsored a project Policy Options for Education Information Systems for the Future. The project was intended to help inform program managers, planners, and policy makers about trends, issues, and opportunities that might affect the design and operation of information systems serving education during the 1980s. The one year project was managed by Rehab Group, Inc. of Falls Church, Virginia.

In recognition of the burgeoning supply of information, the increasing need for information in education, and NIE's dissemination mandate, the Institute is constantly seeking better ways to collect, manage, and distribute information to meet the needs of persons throughout the education community. One mechanism for reaching this goal is information systems and the Federal government has been particularly successful in supporting such systems (e.g., ERIC, NDN, NICSEM/NIMIS) as part of an overall dissemination strategy in education. At the same time, information systems often fail to realize their full potential because they do not change as rapidly as the environments they serve. This study is one of several efforts supported by the NIE to learn more about the effectiveness and promise of information systems.

The study was designed to gather data about emerging information needs in education; technological opportunities for making information systems and dissemination programs more effective; and economic factors related to systems operations and use. Ultimately, the data are to be used for making program recommendations and suggesting policy options at the Federal level.

The study was conducted as a modified Delphi process that involved some 45 participants representing various education and information communities and reflecting different experiences and perspectives. Two Delphi studies were conducted to identify and clarify trends, issues, and opportunities believed to be of most importance to education and to the NIE. The results of each Delphi were used as springboard for further discussion at two corresponding symposiums. In each instance a subgroup of Delphi participants was selected to attend the respective symposium and several participants were asked to prepare and present papers on important themes that had been identified. The symposiums, then, served as forums where participants further refined Delphi findings and attempted to reach consensus about issues, trends, and preferred courses of action for the Federal government. Delphi I and Symposium I focused upon emerging information needs in education. Delphi II and Symposium II were concerned with technological opportunities; and, to a lesser extent, economic factors that are expected to have an impact upon information systems and dissemination programs.

This report is intended to identify those facts, trends, and recommendations of most immediate interest to Federal planners and about which there seemed to be substantial agreement among participants. The report is divided into three major sections that corresponded to the themes of the study; information needs, technological options, and economic factors influencing information systems for education.

Conclusions have been arrived at inductively by examining data from the Delphi studies, commissioned papers, summary reports prepared by the contractor, and personal attendance at the two symposiums. Major conclusion extracted from the study data are highlighted as boxed-in item appearing throughout the report. Each conclusion, or set of conclusion, is followed by a narrative that presents some supporting data from the study. To further facilitate the organization and presentation of study findings, each conclusion or set of conclusions is preceded by a rethrical question. It is important to keep in mind that these questions have been added during the analysis of the study data and were not used to gather data from the study participants.

Finally, it is important to note that this study produced a wealth of information. Findings presented in this paper are unavoidably subjective and are by no means exhaustive. Given the rather specific program focus of this secondary analysis, the reader is encouraged to examine the analysis against his or her own reading of the reports where items are of particular interest.

Information: Need And Supply

How is the need for education information changing?

- o The need for education information is growing dramatically and this trend is expected to continue.
- o No group associated with education is seen as needing less information in the future.
- o There is an increasing demand for information from persons outside the formal education system. Much of this information is needed because of new approaches to education and because of increased participation in education decision making by courts, parents, advocacy groups, students, etc.

One of the major recurring themes from the study was the view that education related information needs are growing dramatically and will continue to do so in the future. This increase is due, it was suggested, to forces both internal and external to education. Within education, teachers are now working with many different materials, program, and students and each has different implications for teaching, individualization, testing, etc. Externally, there are social forces related to our broadening of individual rights, the extension of participative decision making, the transition to an information society, and major shifts in the composition of the population that all extend and expand information needs.

Much of the increasing need for information by educators can be traced directly to actions by Federal and state governments. For example, the participants suggested that many present information needs are related to PL94-142, Section 504, the Lau decision, Title IX, the Bakke decision, civil rights legislation, and Proposition 13 type legislation. The impact of such actions, the participants maintained, is greatest for teachers, who require interpretations, information about model programs, and technical assistance. The study suggests that Federal and state actions will continue to be a major force driving the need for educational information and the broad themes of accountability and competency based education

are expected to be most "information demanding" in the near future. The participants cited several trends, facts, and beliefs that are expected to change education's relationship to, need for, and use of information. They included the following:

- To a greater degree than ever before, tomorrow's worker will have to become something of a scholar, and scholars will have to learn communication, administration and other practical skills to succeed. The knowledge explosion will affect the types of jobs available. Knowledge workers will become one of the largest vocations as they condense and channel the flood of new information into newsletters, syntheses, video tapes/discs, and as they process information for computer storage and software for instructional purposes.

- half of what a person learns in school is no longer valid when she/he reaches middle age

- one-third of the items on the supermarket shelves did not exist 10 years ago
- fifty percent of the labor force earns its living in industries that did not exist when the country began

- three-fourths of all the people employed by industry 12 years from now will be producing goods that have not yet been conceived

- more mathematics has been created since 1900 than during the entire period of recorded history

- 60,000,000 jobs will change in character in the next generation

- six year olds now starting school can expect their vocations to change three times during their lifetimes

- it is estimated that in the future skilled workers will have to attend an educational institution to be totally re-trained at least four times in their lives

- half of what a graduate engineer studies today will be obsolete in ten years; half of what he or she will need to know is not yet known by anyone

- three things that will change education and related information needs most in the next ten years are 1) minimun competency demands, 2) adoption of new technologies, and 3) new ways of financing education

How effectively is education responding to increasing needs for information?

- As a social institution, education is not effectively meeting the challenges of our transition to an information society.

Education is an information industry and, as such, it was presented as having an unique dual social role of producing and using information and preparing its clients to live in an information society. The participants suggested, however, that education is not sufficiently meeting these responsibilities; it is not adequately preparing people to live in an information society, it lags behind other social sectors in the organization and distribution of its own information, and it is not adequately using information for instruction and self-renewal.

What are some areas of growing information need today?

- o model programs
- o crisis topics
- o laws & regulations
- o quality improvement
- o reliable R & D summary information
- o education consumerism
- o positive school climate
- o violence prevention
- o health & drug abuse
- o basics
- o more syntheses, abstracts, and summary data
- o projections & forecasts
- o competency based education
- o energy
- o anthropological data & and information about learning in various cultures
- o mental health
- o teacher burnout
- o the environment
- o parental responsibility
- o small is beautiful philosophy

What are some topics that are expected to significantly influence information needs as we enter the 1980s?

- o accountability
- o individualization of instruction
- o advocacy
- o literacy problems
- o declining enrollment
- o cost effectiveness
- o humanistic education
- o educational quality
- o population mobility patterns
- o education of the handicapped
- o values
- o basics
- o educational equity
- o career & community relations
- o bilingual education
- o funding reductions
- o career & adult education

Since a lot of this information already exists, what is preventing its dissemination and use?

- o Existing information is often not available, accessible, or it is recorded in ways that inhibit its use.
- o Many information needs go unmet because information services do not provide clients with the proper resources.
- o Proper resource management is becoming increasingly important. In the future there will be more information available, more demand for information, and fewer dollars available for collecting information and meeting user requests. Thus, more care will have to be taken to assure that the right information is collected, that it is propoerly recorded, and that the right facilitation is provided if user needs are to be satisfied.

Complementing the growing need for information is the rapidly increasing supply of information. Throughout the study participants observed that there is already more information than we are able to manage. Further, they suggested that the supply of information is creating as many problems as the need for information. Some points about the supply of information illustrate the participants views.

- o There is so much information available that the supply surpasses the demand and the amount of information continues to grow at an increasing rate.
- o There is so much information available it is difficult for many persons to locate and/or select what they need.
- o Despite the amount of recorded information many persons remain "information poor" due to access, availability, or the ability to understand the information they obtain.
- o Despite nearly two decades of dissemination efforts, it would appear safe to say that educators, taken as a whole and un-assisted by some external intermediary or linker, continue to grossly under-utilize the information resources available to them.
- o Parents and minorities have the least access to education information.

Participants suggested that many dissemination shortcomings can be traced to the mis-match between user needs and the information we make available. Specifically, many users want questions answered or want a thorough elaboration

of the pros and cons associated with a particular process, product or issue while our databases provide them with less conclusive or less thorough information. More syntheses, reviews, bibliographies, and new ways of organizing information around specific topics and issues were suggested as ways for improving the responsiveness of databases and other information resources. Further, the participants suggested more attention will have to be given to selecting and recording information as resources decline.

Another barrier to information use that drew much attention form the participants was the actual access people have to the information they need. One participant offered, and others agreed, that the ubiquitious availability of a resource like ERIC does not in itself guarantee that information is accessible. For information to become accessible to a client it was suggested the following conditions must be met:

a. The client must know that information exists relative to his or her need or problem.

b. The client must know what procedures to use in order to obtain information.

c. The client must feel that the information which can be obtained will be credible, both in terms of its original source, and in terms of its immediate source (that is, will the information received be biased in some manner, will it be current, etc?)

d. The information must be obtainable at a reasonable cost relative to the cleint's perceptions of its value (usefulness).

Technology: Opportunities and System Design

Can education information needs be satisfied by new and better information information systems?

- Information systems alone will not satisfy the need for education information, they must be part of or associated with dissemination programs.

- Education information systems developed and supported by the Federal government should be designed and implemented to meet, and examined against, the goals of parent dissemination programs and/or broad Federal goals like increased equity, practice improvement, school change, etc.

The most spirited debate produced by the study was around the issues of information system purpose and use. The participants did not believe it was appropriate for the NIE to consider information systems independantly from other

Federal dissemination efforts, suggesting that we often support the development of information systems and then attempt to use them to reach dissemination objectives. They argued that the NIE is really more interested in dissemination activities and that the Institute should examine information systems within this broader context. Information systems alone, it was argued, will not lead to satisfying the equity and practice improvement expectations of either local of Federal programs, since information external to the school setting is not likely to be used simply because it is available and accessible: It must be mobilized by programs that go beyond identifying resources to provide technical assistance and facilitation.

Several distinctions between information systems and dissemination systems and programs were offered. For example, one participant suggested that the focus of dissemination programs is to bring about educational improvement while the focus of most information systems is to provide information upon client demand. Accordingly, dissemination programs are proactive, while information systems are more reactive and have less formal and shorter term relationships with their users. Another difference was that information systems were viewed as being designed to meet archival and retrieval objectives while dissemination systems are more goal directed and user focused. One participant offered that dissemination systems must be designed to be user driven with clear purposes and consituences if they are to be successful.

Are new communications and information technologies the answer to meeting education information needs?

- New communication and information technologies offer improved methods for storing, processing, and sharing information within the service provider community. They do not, however, offer practical alternatives to present methods of delivering information to clients.
- Where dissemination is the objective, linkers and human agents are presently more able to serve the information needs of people concerned with education than is technology.
- While new information and communication technologies will ultimately improve the dissemination of education information, they offer few short term solutions to present problems in the field.

The application and use of new technologies was seen as useful to two ways. First, participants thought that some of the new communication technologies and networks might be useful ways to commmuicate between information providers and to transmit information. Their suggestions did not, however, include extending these technologies to clients in the practice community. They believed there shold be more exploration into using satellites, cable TV systems, VIEWDATA

type systems, video-discs, minicomputers, etc. Second, the participants implied that technology utilization was the most reasonable long range solution to our dissemination objectives. Interactive audiovisual systems that reach every household and work place and that provide much of the information people require were seen clearly as a reality in the not too distant future. To optimize the effectiveness of these systems, the participants believed that we should be examining ways of preparing persons to deal with these new technologies while remembering that,

> most education information is not presented in ways that make it immediately useful to the practice community , and that
>
> most members of the practice community are not interested in using new information technologies and/or they would require training before they could do so.

The participants did not believe that new technologies offered any short range solutions to NIE dissemination objectives. This view was, in part, based on the belief that 1) most of the information we could provide via highly technological systems cannot be easily used by practitioners, 2) practitioners do not want to use new technologies, and 3) there are too many barriers to implementing new technologies.

As noted earlier, many participants suggested the information we currently offer practitioners is fraught with problems; Much of it is basic research, some lends itself to very narrow conclusions while other studies and reports are too general. There are not enough syntheses and reviews, and our information is seldom organized around the topics and issues of immediate interest. In additon, systems like ERIC offer bibliographic control and require hunting and screening of information after references have been identified. It was argued that practitioners often need immediate information or answers to questions and they do not have the time and energy to directly use technical information systems. It was suggested repeatedly that the most practical short term solutions to such problems are not technological.

The Delphi studies clearly demonstrated that participants did not feel that information clients has any perference for using new technologies or learning new skills to obtain information. One participant suggested that programs that push a particular system/technology are bound to fail and another observed that the "dream of altering the user to suit the new system has not often come true." A majority belief was that efforts to make educators alter their needs and routines to fit our information systems will not succeed. It was suggested that the adoption of a new practice or product must offer clear advantages over existing practices and one participant explained that when a major U.S. corporation made trouble-free information available to key executives these persons continued to reply upon staff assistants to obtain information: there was no advantage to sitting at a terminal and "processing" ones own information. Similarly, another participant suggested that reliable and cost effective computer terminals could now be put in all schools, but that they would not be used until they are preferred over non-use. One participant provided a particularly apt summary of the relationship between the preferences of system designers and those of information clients:

> "It seems clear that, for a variety of reasons,the developer of information files and systems have tended to oversell the 'joys' of personal participation. The assumption that people would want to participate because of sheer fascination, if anyone will now admit to such an assumption, is groundless...It is important not that the user participate in the process, but that he receive the benefits..."

Another distinction made between information systems and dissemination systems is that the former rely primarily upon technology to bring information under some type of control and retrieve it while the latter (at least in education) require more human interaction. Specifically, the participants suggested in the Delphi studies that technology might be the immediate solution to information management issues, but that they did not see many technological solutions to education's dissemination shortcomings. Rather, their comments suggest dissemination systems should use technology (i.e., ERIC) to deliver information to intermediate agency linkers and use more interpersonal services to reach end cleints. Some related comments were:

- Dissemination information systems work best when there is a linker and face-to-face contact. One reason for this is that much of the research information such systems provide is conclusion oriented and requires interpretation and/or synthesis.

- The linkage agent role will continue to grow in importance.

- Katter and Hood studied users and found that 60% of those included in the study indicated their primary source of information about education was from face-to-face contact.

- Without assistance, many clients are unable to separate needs from wants and may not be able to articulate their needs.

- Most people still fear machines and are particularly unwilling to interact with computer based technologies.

- Like others, educators prefer face-to-face communications. Despite the fact that information storage and retrieval have been around for about 20 years, no one relies seriously "on automatic systems for answering questions, retrieving facts, or searching out bibliographic citations. By not seriously, I mean to the extent of ceasing to use such methods as asking a friend."

The participants suggested many characteristics of an dissemination/information system designed and operated to meet the NIE's dissemination objectives. Their suggestions included the following.

- A system built around a network of intermediate service providers who get their information from national data-bases like ERIC and NTIS, special centers and clearinghouses, and local files and resources.

- A system is which there is a high degree to coordination and standardization across Federal and state supported information resources to 1) avoid overlap and redundancy, and 2) to make it easier to identify the appropriate resource and information.

- A system that is largely supported by Federal and state funds and offers many free services to clients.

- A systems that uses human agents or linkers and other resource personnel to help clients articulate their needs, obtain and deliver information, and provide technical assistance and other forms of facilitation.

- A system that is part of the education system and teacher training, and that delivers information to a local support system that serves teachers and administrators. The "local support system" might be a linker, an instructional resource center, a curriculum supervisor, etc.

- A system that is proactive and targets information, and that provides more friendly, supportive, and personal services.

- A system that is not centrally managed.

- A system that delivers "answers" and special packages to clients; providers will be interpreters and repackagers of information.

- A system that draws knowledge producers and information users together to assure there are responsive data-bases.

- A system whose data-base contains many syntheses, simplified research reports, and topical reports.

- A system that provides for in-service training and staff development.

- A system that offers data-bases that provide information to facilitate local decision-making and offer information about evaluated programs and practices.

- A system that uses ERIC as its central resource.

- A system in which Federally supported centers, clearinghouses, data systems, etc. serve intermediate service agencies rather than final information clients.

Economic Issues

Who should support the collection and dissemination of education information?

- The bulk of financial support for dissemination and information services should continue to come from public funds (Federal, state, and local):
- Client usage of information and dissemination services vary with costs and most clients should not be charged for such services.

The participants express concern that we are probably entering a period of stable or declining support for dissemination and information services. While they favored passing some of the cost for such services along to the clients, they did not believe this to be a realistic possibility. First, they suggested that charging for information services would impact most on those who are already the information poor as these persons are most likely also economically disadvantaged. Second, people are not in the habit of paying much for information. As a consequence, the participants did not see any immediate alternative to continued Federal support. One participant suggested another barrier to passing along costs is that most people perceive information as "free" since the costs of libraries and mass communication are hidden. Further, he suggested that we give more attention to reconsiling our support policies with equity objectives by looking at issues like whether we should support a service (like a library) or provide support to an individual (like food stamps programs).

Another participant illustrated that the cost of information may be one of the most significant barriers to its use. Along with other information providers, he has been able to show that "when information services are provided without a fee, the most impoverished through the wealthiest of school districts will both make similar and as fequent demands upon the service."

The participants suggested that the following ideas be considered for maintaining services as financial support declines.

- Shift to pre-packaging of information from individual responses to save money.
- Shift to providing technical assistance by video-tape or telecommunications systems.
- Work with interested users only.
- Transfer costs of providing services to users; where possible, and seek new funding sources.

- Make more potential users aware of what is available.
- Make users aware of accessibility costs and contraints.
- Increase accountability for allocation of resources.

What should be the Federal role in supporting the the distribution of education information?

- The Federal government, particularly in education, should assume the lead responsibility for collecting, organizing, and disseminating information.
- The Federal government should provide leadership and financial assistance.
- The Federal government should provide coordination assistance.

The participants were quick to acknowledge the Federal contribution to collecting, organizing, and dissemination educational information. At the same time they expressed concern that the growing number of agencies involved in disseminating information and the lack of coordination and standards across these systems is in many instances making it increasingly difficult to locate information. Some of their specific comments were as follows:

- As the quantity and types of information have increased, the number of agencies taking responsibility for delivering information to clients (taken either as individuals or other agencies) has also increased, with an almost bewildering growth in number over the past 5 or so years. There appear to be an almost unlimited number of centers, services, exchanges, clearinghouses, etc., coming into existence. While this is in itself not a negative development the increase in actors in the field may not mean an increase in access for practitioners.
- ...the growth in the number of agencies or organizations involved in information and dissemination in education has been accompanied by considerable vagueness in terms of functions, services, and primary clientele.
- Very few people in the Federal Government or in the field of education know where all these information centers are located or whom they serve.
- Unfortunately those who provide information and referral services have themselves become part of the maze to which they were supposed to offer

guidance. This orderless growth has resulted in a specialized, fragmented system characterized by
- duplication of and competition between services and functions
- waste of resources
- barriers obstructing access, and
- inadequate services.

As a result, people can be shuffled from agency to agency, and many either will not receive the services needed, or will receive them only after great or exaspertaing difficulty. (Comptroller General of the United States, 1978).

- It is difficult to perceive how teachers or principals can, as a matter of time if nothing else keep on top of the burgeoning number and variety of information sources to enough of a degree to make good use of them. Keeping abrest of the situation is difficult enough for those whose primary assignment is to provide information linkage. At a recent meeting of intermediate agency personnel who had information/dissemination functions, the primary concern expressed by practitioners was their difficulty in keeping up to date with, and making connections with, the plethora of information sources which have sprung up over the last few years. In spite of common interest and needs, they were unsure they wanted to form even an informal network, because they did not feel they could handle those that already exist. If this is a common feeling among those whose primary job is to know and work with educational information and dissemination, the situation at the average school site must be overwhelming.

Given the anticipated increase in the need for educational information and the apparent difficulty that many clients have identifying and obtaining information, the participants suggested that the proper Federal role in dissemination is one of leadership and financial assistance.

Throughout the study participants mentioned several tasks that should fall to the Federal government. Those mentioned most frequently were as follows.

- providing leadership
- coordination across agency efforts
- guiding the development and acceptance of standards
- providing operational support, as required
- providing direction and support for research and evaluation

To improve dissemination, Delphi participants suggest that Federal policies and programs focus upon:

- coordination diverse information sources that serve the same clientele
- committing monies to training and hardware at the school district level

- o providing for information exchange about and technical assistance from successful projects
- o preparing materials targeted for specific groups
- o supporting and developing incentives for on-going flexible technical assistance from a variety of sources
- o making dissemination of information a central priority
- o including more information on planning, including demographic and economic data bases

What should the NIE's role bein supporting the distribution of education information?

- o Given the mission of the Institute and significance of the ERIC system, the NIE should assume a lead role in developing, coordinating, and managing information systems and dissemination programs that serve education.
- o The NIE should support more dissemination.
- o The NIE should support dissemination research and evaluation.

NIE should continue its central role as an information resource developer and further clarify its plans and objectives. Regarding the latter, it was clear from both the Delphi comments and the Symposiums that many people in the field find NIE goals of practice improvement and equity too abstract to guide Institute funded dissemination efforts. Some comments related to NIE's role were:

- o NIE should continue its role as a database developer, provide resources to maintain information collections, and coordinate other national and across-system activities.
- o Participants in the Delphi studies felt NIE could address a number of problems or needs, but should emphasize only a few. Improvement of practice could be a major objective for a number of years. If this or any other objective is emphasized, it should be operationally defined and communicated to people and agencies at the Federal, state and local levels.
- o NIE needs an information dissemination and use plan. Such as plan should identify program objectives, client groups, information needs, information resources, information delivery programs, evaluation programs, research programs, training programs, and similar topics. Several participants cited a need for a "Program for the 80s". Such a plan could communicate to others what NIE is trying to accomplish and permit discussion and modification of the plan. Others outside NIE would have a better idea of planned directions and where they fit.
- o There was considerable concern among the participants that the first priority was to decide who the client groups of NIE are and who they should be. There was agreement among the participants that the client group

should be broad and include professionals in formal and non-formal education, parents, citizen groups, students, legislative groups, and school boards. Most participants felt there was a need to identify a limited number of client groups that would serve as linkers to clients. Policy needs to be established regarding emphasis to be given to various client groups and to various linker groups.

- Without a policy regarding client groups there was a general feeling that it is difficult to develop a coordinated program and to communicate a program to other agencies and users of information. Substantial effort should be given to identifying current priority clients and those that should receive greater service in the future.

- As resources diminish, NIE will have to move toward more user-driven dissemination systems, and research will have to be more responsive to practitioner's needs.

During the course of the study there was much conversation about the role of the client in improving the field of dissemination. Given the suggestion that the NIE move toward more user-driven dissemination systems, the participants offered that we must learn more about clients and do more to involve them in the operations of the systems we develop and support. Some of the reason they gave in support of these suggestions were:

- we do not know much about users or non-users of our dissemination/ information systems

- there is little consensus as to what information is needed, by whom,when, for what, why, and via what format(s)

- There is ample evidence in various literature to suggest that (a) impact on clients is dependent on the extent of client involvement in the dissemination service process, and (b) different media permit different degrees of client/media interaction. (H. Burward Hofle[illegible], 1978)

- A dissemination system cannot survive if it is not a part of the needs identification process of the clients.

Throughout the study there was evidence that we don't know enough about clients and/or needs to either significantly increase information usage or build more effective systems. It was suggested repeatedly that NIE both conduct and support user studies. Some example of suggestion are:

- Conduct or support a full range of "client" studies; including studies of non-users of information/dissemination system, etc.

- User studies should be related to system/program design and operations issues and to specific agency missions.

- User studies should go beyond information needs and consider issues like how the information is to be used, preferred delivery modes and formats, and local obstacles to obtaining and using information.

Suggested Research & Evaluation Activities

- There should be more sponsored research and evaluation of ongoing dissemination and information systems. The Federal government should earmark evaluation monies as part of any supported program.

- There should be research on how to reach the information poor or "have nots."

- There should be on-going information needs assessments and the preferred methodology is surveys of information broakers or actural clients and potential clients.

- There should be "status" studies of different types of knowledge/information. How well is the information orgnaized? Is the information available? Accessible?

- User studies should be conducted to determine what information people want in contrast to what information they need.

- There should be more studies of information accessibility. Certain information resources like ERIC are available throughout the United States. This is not to say that these resources are accessible.

- Study access and access paths school-based practitioners have to existing and forthcoming information.

- Develop knowledge about the management of information providing agencies and system building by studying the actual operations of these agencies.

- Study new methods of abstracting and indexing information.

- Examine the knowledge and applicability of information to be included in data bases. Look for new ways of abstracting and retrieving information.

- Evaluate the usefulness of updated reviews as a new type of information system. The concept of a series of updated reviews is widely applicable in any well-developed discipline or field which is moderately active. The alternative to this is the present practice of allowing the new findings in a field to accumulate until no existing review any longer respresents recent advances.

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